Contrasting sediment records of marine submersion events related to wave exposure, Southwest France

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Résumé en anglais	Sediment records of two contrasting backshore coastal marshes, extremely vulnerable to recent and historical marine flooding events, located on the SW coast of France, have been investigated using a multiproxy approach. The studied marshes are 30 km apart and have been flooded by similar storm events (7 marine floods in the last 250 years). One is located in a wave-exposed coast but isolated from the sea by a sediment barrier, whereas the other is located in a sheltered estuarine environment and isolated from the sea by a dike. One core was collected in each marsh and information on grain-size, foraminifera, shell contents and stable carbon isotopes was obtained along with an age model using 210Pb, 137Cs and 14C. Core data combined with historical maps give evidence of a typical estuarine backfilling, part of the Holocene regressive parasequence, including an intertidal mudflat at the base and a backshore environment at the top. Despite the absence of grain size anomalies, marine flood-related sedimentation in the backshore area of both marshes is identified by a mixture of marine and terrestrial features, including marine fauna, vegetation debris and variation in the δ13C signature of the organic fraction. Very low sedimentation rates between flood events and/or bioturbation prevents the identification of individual episodic marine floods in the sediment succession. Comparison of the two sedimentary successions shows that the foraminifera deposited by marine submersions are of two different types. Foraminifera are monospecific and originate from the upper tidal mudflat in the sheltered marsh; whereas in the backshore marsh located in a wave-exposed environment, they show higher diversity and originate from both shallow and deeper water marine environments. This study shows that wave exposure can control the faunal content of marine flood sediment records in coastal marshes.
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Liens
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